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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,967	03/31/2004	Clarence T. Tegreene	0104-003-006-000000	9160

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EXAMINER

WENDELL, ANDREW

ART UNIT	PAPER NUMBER
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2618

DATE MAILED: 12/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/813,967

Applicant(s)

TEGREENE, CLARENCE T.

Examiner

Andrew Wendell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13, 15-17 and 19-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15-17 and 19-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 7, 17, and 19-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura et al. (US Pat Appl# 2004/0005889) in view of Stine (US Pat Appl# 2003/0033394).

Nishimura et al. wireless communication apparatus teaches at least one of an antenna generation unit 2 (Fig. 3, section 0080) or an signal detection unit 2 (Fig. 3); a antenna system 6 (Fig. 3) operably coupled with the at least one of an antenna signal generation unit 2 (Fig. 3) or an antenna signal detection unit 2 (Fig. 3), a mote 3 (Fig. 3) having the antenna system 6 (Fig. 3) operably coupled with the at least one of an antenna signal generation unit 2 (Fig. 3) or an antenna signal detection unit 2 (Fig. 3). Nishimura et al. fails to teach a directional antenna and antenna steering.

Stine's access and routing protocol for ad hoc network teaches wherein the directional antenna system (Sections 0205-0207) further includes but is not limited to an antenna steering unit (Sections 0309-0310). Note, Stine's invention is an ad hoc network (section 0003) which is equivalent to a mote network because both deal with computing, sensing devices, and communication.

Therefore, it would have been obvious at the time of the invention to one of ordinary skill in the art at the time the invention was made to incorporate a directional antenna and antenna steering as taught by Stine into Nishimura et al. mote apparatus in order to improve the success of packet exchanges (Section 0309).

Regarding claim 2, the combination including Stine teaches a beam-steering antenna system (Sections 0309-0310).

Regarding claim 3, the combination including Stine teaches a switched-beam antenna system (Sections 0309-0310).

Regarding claim 4, the combination including Stine teaches a switched-beam antenna system (Sections 0309-0310).

Regarding claim 7, the combination including Stine teaches an adaptive-antenna system (Sections 0309-0310).

Regarding claim 17, the combination including Nishimura et al. teaches an electromagnetic system (RF, Section 0004).

Regarding claim 19, the combination including Nishimura et al. teaches at least one of an animate or inanimate unit in physical contact (Section 0070, 0074, and 0076) with the mote 3 (Fig. 3) having the directional antenna system 6 (Fig. 3) operably coupled with the at least one of an antenna signal generation unit 2 (Fig. 3) or an antenna signal detection unit 2 (Fig. 3).

Regarding claim 20, method claim 20 is rejected for the same reason as system claim 1 since the recited elements would perform the claimed steps.

Regarding claim 21, the combination including Nishimura et al. teaches emplacing at least one of an animate or inanimate unit in physical contact with the mote (Section 0070 and 0074).

Regarding claim 22, the combination including Nishimura et al. teaches positioning an inanimate component in physical contact with the mote (Section 0070 and 0074).

Regarding claim 23, the combination including Nishimura et al. teaches positioning an animate component in physical contact with the mote (Section 0076).

Regarding claim 24, method claim 24 is rejected for the same reason as system claim 1 since the recited elements would perform the claimed steps.

Regarding claim 25, Nishimura et al. teaches forming at least a part of the mote body from a substrate (Section 0013).

Regarding claim 26, Nishimura et al. teaches forming at least part of the antenna from a substrate (Fig. 13 and 14).

Regarding claim 27, Nishimura et al. teaches affixing at least part of the antenna 6 (Fig. 13) to the mote body 3 (Fig. 13).

Regarding claim 28, Nishimura et al. teaches integrating a directional antenna 6 (Fig. 3) proximate to a mote body 3 (Fig. 3) with at least one of an animate or inanimate unit (Sections 0070, 0074, and 0076).

Regarding claim 29, Nishimura et al. teaches at least one of affixing the mote body to or encasing the mote body in an inanimate structural component (Sections 0070 and 0074).

Regarding claim 30, Nishimura et al. teaches at least one of affixing the mote body to or encasing the mote in an animate structural component (Section 0076).

3. Claims 5 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura et al. (US Pat Appl# 2004/0005889) in view of Stine (US Pat Appl# 2003/0033394) as applied to claim 1 above, and further in view of Bridgelall (US Pat Appl# 2005/0143133).

Regarding claim 5, Nishimura et al. wireless communication apparatus in view of Stine's access and routing protocol for ad hoc network teaches the limitations in claim 1. Both Nishimura et al. and Stine fail to teach a horn antenna system.

Bridgelall's system and a node used in the system for wireless communication and sensory monitoring teaches a horn antenna system (Section 0044).

Therefore, it would have been obvious at the time of the invention to one of ordinary skill in the art at the time the invention was made to incorporate a horn antenna system as taught by Bridgelall into a directional antenna and antenna steering as taught by Stine into Nishimura et al. mote apparatus in order to improve a communication and sensor network (Section 0004).

Regarding claim 10, Bridgelall further teaches a parabolic antenna (Section 0051).

Regarding claim 11, Bridgelall further teaches an array antenna (Sections 0043-0044).

Regarding claim 12, Bridgelall further teaches a horn antenna (Section 0044).

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4. Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura et al. (US Pat Appl# 2004/0005889) in view of Stine (US Pat Appl# 2003/0033394) as applied to claim 1 above, and further in view of Chiang et al. (US Pat Appl# 2002/0036595).

Regarding claim 6, Nishimura et al. wireless communication apparatus in view of Stine's access and routing protocol for ad hoc network teaches the limitations in claim 1. Both Nishimura et al. and Stine fail to teach a electromagnetic reflector.

Chiang et al. adaptive antenna for use in wireless communication systems teaches one electromagnetic reflectors of one shape corresponding to one selected antenna pattern (Section 0004).

Therefore, it would have been obvious at the time of the invention to one of ordinary skill in the art at the time the invention was made to incorporate a electromagnetic reflector as taught by Chiang et al. into a directional antenna and antenna steering as taught by Stine into Nishimura et al. mote apparatus in order to improve directivity of the antenna (Section 0004).

Regarding claim 8, the combination including Chiang et al. teaches a yagi antenna (Section 0003 and 0004).

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura et al. (US Pat Appl# 2004/0005889) in view of Stine (US Pat Appl# 2003/0033394) as applied to claim 1 above, and further in view of Hood, III (US Pat# 6,778,844).

Regarding claim 9, Nishimura et al. wireless communication apparatus in view of Stine's access and routing protocol for ad hoc network teaches the limitations in claim 1. Both Nishimura et al. and Stine fail to teach a log-periodic antenna.

Hood's system for reducing multipath fade of RF signals in a wireless data application teaches a log-periodic antenna (Col. 11 lines 16-20).

Therefore, it would have been obvious at the time of the invention to one of ordinary skill in the art at the time the invention was made to incorporate a log-periodic antenna as taught by Hood, III into a directional antenna and antenna steering as taught by Stine into Nishimura et al. mote apparatus in order to provide better communication and keeping the device small (Col. 5 lines 1-8).

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura et al. (US Pat Appl# 2004/0005889) in view of Stine (US Pat Appl# 2003/0033394) as applied to claim 1 above, and further in view of Kwon (US Pat# 6,943,747).

Regarding claim 13, Nishimura et al. wireless communication apparatus in view of Stine's access and routing protocol for ad hoc network teaches the limitations in claim 1. Both Nishimura et al. and Stine fail to teach a biconical antenna.

Kwon's small and omni-directional biconical antenna for wireless communications teaches a biconical antenna (Fig. 4).

Therefore, it would have been obvious at the time of the invention to one of ordinary skill in the art at the time the invention was made to incorporate a biconical antenna as taught by Kwon into a directional antenna and antenna steering as taught by

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Stine into Nishimura et al. mote apparatus in order to minimize impedance mismatch and reduce the size of the antenna (Col.2 lines 60-65).

7. Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura et al. (US Pat Appl# 2004/0005889) in view of Stine (US Pat Appl# 2003/0033394) as applied to claim 1 above, and further in view of Balachandran et al. (US Pat Appl# 2004/0230638).

Regarding claim 15, Nishimura et al. wireless communication apparatus in view of Stine's access and routing protocol for ad hoc network teaches the limitations in claim 1. Both Nishimura et al. and Stine fail to teach an electro-mechanical system.

Balachandran et al. energy-efficient ADHOC network teaches an electro-mechanical system (Section 0001).

Therefore, it would have been obvious at the time of the invention to one of ordinary skill in the art at the time the invention was made to incorporate an electro-mechanical system as taught by Balachandran et al. into a directional antenna and antenna steering as taught by Stine into Nishimura et al. mote apparatus in order to improve energy consumption (Section 0009).

Regarding claim 16, Balachandran further teaches a micro-electro-mechanical system (Section 0001).

Response to Arguments

Applicant's Remarks	Examiner's Response
"Under the MPEP standards there can be no teaching to modify/combine the	Stine's invention is combinable with Nishimura because a mote network, which

<p>technologies of Nishimura with the technologies of Stine as suggested by Examiner in that such combination will render the technologies of Nishimura unfit for their intended purposes.”</p>	<p>Nishimura teaches, is similar to an ad hoc network. Nishimura teaches in sections 0070-0072, that a mote network has a sensing and communication function. Similarly, Stine teaches in section 0003 that an ad hoc network does the same function of a mote network of sensing and communicating. Bridgelall reference further supports that an ad hoc network (Sections 0005-0006) is similar to a mote network for the same reasons as stated. Note, the Bridgelall reference is not intended to be used for the rejection or a new ground of rejection, but to further demonstrate examiner's reasoning.</p>
<p>“No evidence teaching how to steer the directional antennas of the suggested modification/combination such that intended communications will take place, and thus the suggested modification/combination would render the technologies of Nishimura unsatisfactory</p>	<p>8. In response to applicant's argument that beam steering and a directional antenna would not be intended in Nishimura's mote network, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the</p>

<p>for their intended purposes: no teaching to modify/combine as a matter of law.”</p>	<p>primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See <i>In re Keller</i>, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).</p> <p>As stated above Stine and Nishimura have support for combining and therefore it would be reasonable to combine beam steering and a directional antenna since they would be communicating information.</p>
<p>“Even if there were a teaching of how to direct the directional antennas of the suggested modification/combination, the very directionality of the antennas would render the technologies of Nishimura unsatisfactory for their intended purposes: no teaching to modify/combine as a matter of law”</p>	<p>In response to applicant's argument that a directional antenna would not be intended in Nishimura's mote network, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather,</p>

	<p>the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See <i>In re Keller</i>, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).</p> <p>Again, the above remarks further support examiner's reason.</p>
<p>"No objective evidence of teaching to modify/combine exists in that proposed modification/combination changes the principle of operation of Nishimura: no teaching to modify/combine as a matter of law"</p>	<p>9. In response to applicant's argument that no objective evidence of teaching to modify/combine exists in that proposed modification/combination changes the principle of operation of Nishimura, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See <i>In re Keller</i>, 642 F.2d 413, 208 USPQ 871</p>

	<p>(CCPA 1981).</p> <p>Again, the above remarks further support examiner's reason.</p>
<p>"Suggested teaching appears to be based on inadvertent impermissible hindsight; applicant requests issuance of a notice of allowance."</p>	<p>10. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See <i>In re McLaughlin</i>, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).</p> <p>There is no impermissible hindsight because examiner stated the motivation given in the Stine reference (Section 0309).</p>

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

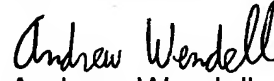
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Wendell whose telephone number is 571-272-0557. The examiner can normally be reached on 7:30-5 M-F.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on 571-272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Andrew Wendell
Examiner
Art Unit 2618

11/13/2006

 11/16/06
QUOCHIEN B. VUONG
PRIMARY EXAMINER